TSETLIN, A. L. Cand. Biolog. Sci.

Dissertation: "Morphological Modifications of Erythrocytes Due to the Action of the Antimalarial Preparations of the Acridine Series." Inst of Malaria, Medical Parasitology and Helminthology, Acad Med. Sci. USSR, 6 Oct 47.

SO: Vechernyaya Moskva, Oct, 1947 (Project #17836)

TSETLIN, A.L.; USOVA, K.I.

Periodicity in the excretion of intestinal protozoa. Dokl. AN Tadzh.SSR no.5:31-34 '52. (MLRA 9:10)

1. Tadzhikskiy institut malyarii i meditsinskoy parazitologii. Predstavleno chelnom-korrespondentom AN Tadzhikskoy SSR N.F. Berezkinym.

(Protozoa)

USSR / Zooparasitology. Parasitic Protozoa. G

Abs Jour : Ref Zhur - Biol., No 12, 1958, No 52999

Author : Tsetlin, A. L.
Inst : Not given
Title : Survival of Ascaris Lumbricoides Eggs in Stalinabad Soils.

Orig Pub : Sb. rabot po malyarii i gel'mintozam. Vyp. 1, Stalinabad, 1956, 67-72

Abstract : Ascaris eggs, removed to the external medium in late fall or winter, do not develop because of low soil temperature, but retain viability up to April-May when their development begins. The egg development is accomplished in 18-20 days in areas brightly illuminated by the sun, and in 20-35 days in shady areas. On spots unprotected from the sun at the soil surface or at a depth of 1 cm., the developed larvae die by the second half of May. During the summer months,

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the eggs die without being developed in areas illuminated by the sun. On grass-covered areas, 25-30% of the eggs develop, but viability of larvae is of short duration, and after 15-20 days they lose their motility. The egg deformation at this time is caused chiefly by low moisture content in the soil under relatively favorable temperature conditions. The comparatively rapid destruction of ascarides eggs in the soil limits the significance of the soil factor in spreading ascaridosis to the republic's population.

KHASHIMOV, D.M., dotsent (Stalinabad); TSETLIN, A.L., kandidat biologicheskikh nauk (Stalinabad); KUTCHAK, S.N. (Stalinabad); SPAFOPULO, P.K. (Stalinabad).

Effect of intestinal protozoa on the course of bacillary dysentery. Klin.med. 31 no.12:74-75 D '53. (MLRA 7:1)

1. Iz kafedry infektsionnykh bolezney (ispolnyayushchiy obyazannost' zaveduyushchego - dotsnet S.Ye.Shapiro) Stalinabadskogo meditsinskogo instituta im. Avitsenny, Instituta malyarii i meditsinskoy parazitologii Ministerstva zdravookhraneniya Tadzhikskoy SSR i Stalinabadskoy infektsionnoy bol'nitsy.
(Dysentery) (Protozoa, Pathogenic)

AL'F, S.L.; TSETLIN, A.L.; BURMAKINA, V.F.; MAMKEYEVA, Kh.I.

Dynamics of ascariasis in regions where mountain dwellers settle down in valleys. Sbor. rab. po mal. i gel'min. no.2: 223-227 '59. (MIRA 15:3)

(TAJIKISTAN--ASCARIDS AND ASCARIASIS)

VERMEL', Ye.M. (Moskva, V-261, ul. Panferova, D.8, kv.40); TSETLIN, A.L. (Moskva, V-191, Khavsko-Shabolovskiy pereulok, d.20/1, kv.25)

Antineoplastic activity of some furocoumarins. Vop. onk. 10 no.6:85-90 '64. (MIRA 18:3)

1. Iz Vsesoyuznogo instituta lekarstvennykh i aromaticheskikh rasteniy (dir. - Kondratenko)

TSETLIN, A.L.; NIKONOV, G.K.; SHVAREV, I.F.; PIMENOV, M.G.

Antineoplastic activity of natural coumarins. Rast. res. 1 no.4: 507-511 '65 (MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut lekarstvennykh i aromaticheskikh rasteniy, Moskva. Submitted April 6, 1965.

GINZBURG, Zinoviy Borisovich; TSETLIN,A.M., redaktor; NADBAKH,M.P., retsenzent; STERIN,Ye.M., retsenzent; PITERMAN,Ye.L., redaktor; KOLESNIKOVA,A.P., tekhnicheskiy redaktor;

[Movable electric power stations] Peredvizhnye elektrostantsii. Moskva, Goslesbumizdat, 1955. 254 p. (MLRA 9:2)
(Electric power plants)

ALYAB'YEV, V.I., inzhener; TSETLIN, A.M., inzhener.

Remote control of skidding rigs. Mekh.trud.rab.10 no.7:9-12 Jl '56.
(Lumbering--Machinery) (Remote control) (MLRA 9:9)

TSETLIN, A. M.

7675. TSETLIN, A. M. -- Tsentralizovannoye elektrosnabzheniye na lesozagotovkakh. M-L., Goslesbumizdat, 1954. 108 S. S ill. 22 sm. 5.000 ekz. 3R. 5K. --Pered zagl. avt: L. V. Roos, V. I. Alyabyev, M. Ye. Boldov, L. S. Itinai, A. M. Tsetlin.--Bibliogr. V. kontse knigi (55-3837) P

634.98:621.3 (016.3)

SO: Knizhnaya Letopsis', Vol. 7, 1955

BOLDOV, M.Ye., starshiy nauchnyy sotrudnik; TSETLIN, A.M., starshiy nauchnyy sotrudnik

Detecting defective insulators on the contact network of electrified railroads. Trudy TSNIIME no.34:71-89 '62. (MIRA 16:1)
(Electric railroads) (Electric insulators and insulation)

1. ROOS, L. V., ALYABEV, V. I., Eng., ITINA, L. S., Eng., TSETLIN, A. M., Eng.

2. USSR (600)

4. Lumbering

7. Centralized electric power supply at the IAkshanga lumber combine. Mekh. trud. rab. 7, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

IOFFE, A.I., starshiy nauchn.sotrudnik; TSETLIN, A.M., otv.red.

[Automatic voltage regulators for generators of central electric power plants of lumbering enterprises] Avtomaticheskoe regulirovanie napriazheniia generatorov na tsentral'nykh elektricheskikh stantsiiakh lesozagotovitel'nykh predpriiatii. TSentr. nauchno-issl. in-t mekhanizatsii i energ. lesnoi promyshl., 1958. 59 p. (MIRA 12:2)

1. SibNIILKHE (for Ioffe).

(Voltage regulators) (Electric power plants--Equipment and supplies)

ROOS, L. V.; ALYAB'EV, V. I., Eng.; ITINA, L. S., Eng.; TSIELIK, A. K., Eng.

Electric Power Plants

Centralized electric power supply at the Yukshanga lumber combine, Mekh. trud. sel. 7, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

KASHECHKIN, N.N.; PEREL'MUTER, N.M.; VINOGOROV, G.K.; YERMOLAYEV, V.M.; ITINA, L.S.; MIKHAYLOVSKIY, Yu.V.; BOLDOV, M.Ye.; TSETLIN, A.M.; ZHURAVLEV, B.A., red.izd-va; BACHURINA, A.M., tekhn.red.

[Handbook for electrical engineers in the lumber industry] Spravochnik elektromekhanika lespromkhoza. Moskva, Goslesbumizdat, 1958. 320 p. (MIRA 12:4)

1. Nauchnyye rabotniki TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for all except Zhuravlev, Bachurina).
(Electric engineering--Handbooks, manuals, etc.)
(Lumbering--Machinery)

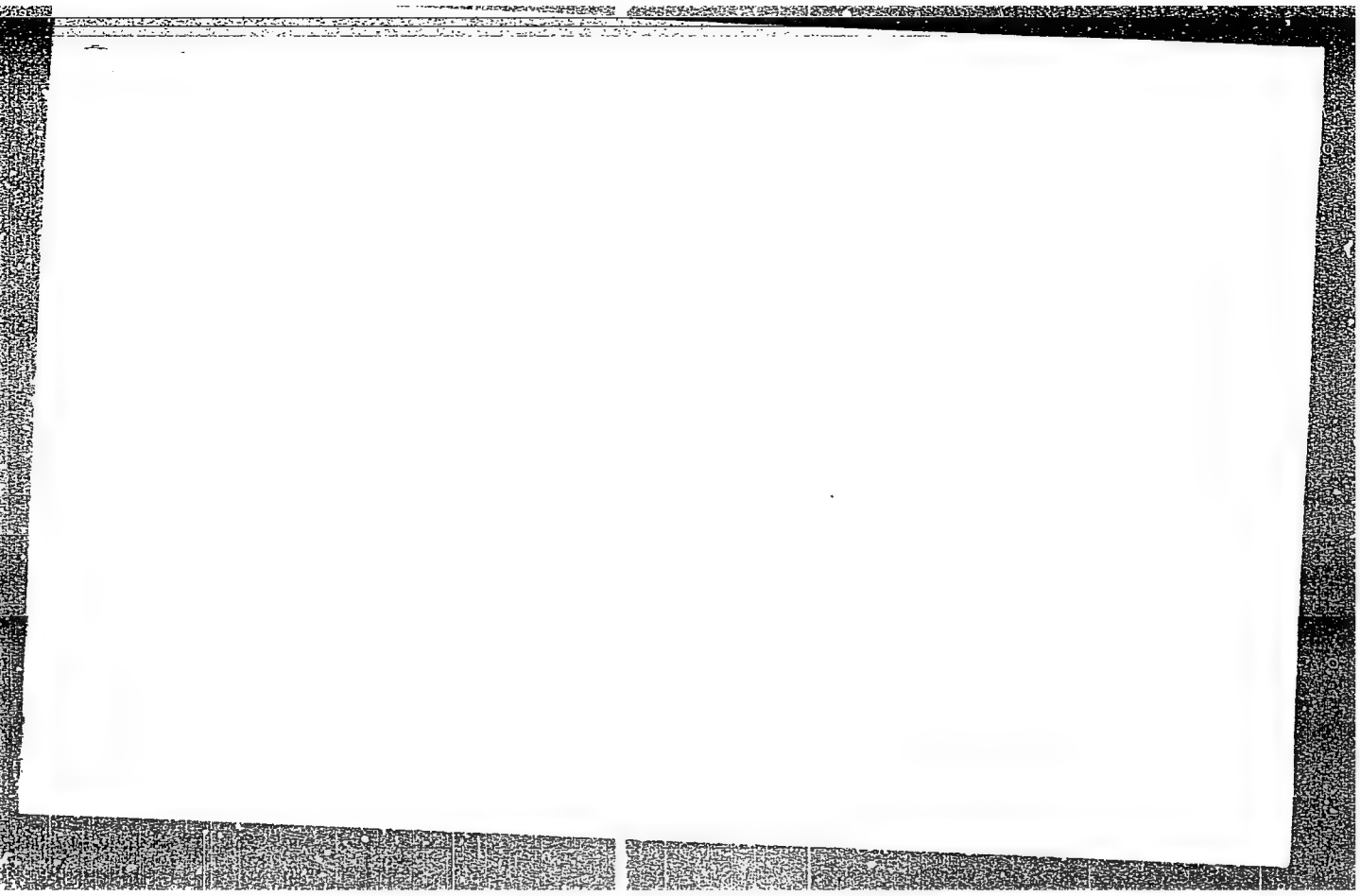
PEREL'MUTER, Naum Moiseyevich; ITINA, Liya Solomonovna; KUCHARINA, Klavdiya Ivanovna; BOLDOV, Mikhail Yefimovich; ALYAB'YEV, Viktor Ivanovich; TSETLIN, Aleksandr Mikhaylovich; POYARKOV, K.M., red.; PITERMAN, Ye.L., red. izd-va; VDOVINA, V.M., tekhn. red.

[Electrification of lumbering enterprises] Elektrifikatsiia lesozagotovitel'nykh predpriiatii. Moskva, Goslesbumizdat, 1961. 358 p. (MIRA 15:2)
(Electricity in lumbering) (Electric railroads)

TSETLIN, B.

On the problem of work classification depending on work conditions. Biul.nauch.inform.; trud i zar.plata 3 no.6:33-40 '60. (MIRA 13:6)

(Job analysis)



APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757010016-3"

AUTHORS: Tsetlin, B. L., Rafikov, S. R. 62-11-26/29

TITLE: On the Effect of X-Radiation on Polyamides (O deystvii rentgenovskogo izlucheniya na poliamidy)

PERIODICAL: Izvestiya AN SSSR, Otdel.Khim.Nauk, 1957, Nr 11, pp.1411-1413 (USSR)

ABSTRACT: Here the effect of a highly intensive X-radiation on polyhexamethylenadipinamide (anide) and polyamide, which forms a product of a mutual polycondensation of the hexamethylenediamine with the azelaic acid, the adipinic acid and caprolactome (anide G-669, reference 2), was investigated. The samples of the anide G-669 were investigated in non-stretched, those of the anide in stretched condition. It is shown that under the radiation influence in the polyamides processes of a radiation vulcanization and such of a crystallization decrease take place. There are 2 figures and 6 references, 5 of which are Slavic.

ASSOCIATION: Institute for Element-Organic Compounds of the AN USSR (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

SUBMITTED: June 19, 1957

AVAILABLE: Library of Congress

Card 1/1

TSETLIN, B.L.

26-12-11/49

AUTHORS: Tsetlin, B.L., Candidate of Chemical Sciences, and Karapetyan, Sh.A., Candidate of Technical Sciences

TITLE: Chemical Effect of Ionizing Radiation (Khimicheskoye deystviye ioniziruyushchikh izlucheniy)

PERIODICAL: Priroda, 1957, No 12, pp 55-57 (USSR)

ABSTRACT: The article deals with the All-Union Conference on Radiation Chemistry which was held in March 1957 in Moskva by the Department of Chemical Sciences of the AN, USSR and the Ministry of Chemical Industry. In the discourses delivered, all theoretical and practical problems of major importance in this field were treated. A whole series of lectures was devoted to the effect of radiation on aqueous solutions of inorganic and organic substances. The method of electronic paramagnetic resonance was given special attention as enabling direct inquiry into the free radicals which play an important part in radiation processes. Great interest was aroused by lectures dealing with electro-chemical phenomena caused by radiation. Soviet scientists made an important discovery in this field. They established the principal possibility of converting radiation energy into electric power in radiative galvanic cells. Another topic

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of interest was the effect of radiation upon high molecular compounds, which is of special importance for the production of radiation-resistant polymeric materials, such as rubber, plastics and synthetic fibers. Soviet scientists have been very successfully in the field of radiational vulcanization of rubber. The method has many advantages over the ordinary "sulphuric" vulcanization, making rubber more resistant to heat and wear. The last session was devoted to the inspection of the newest radiation equipment developed by the Institute of Physical Chemistry of the AN, USSR (Institut fizicheskoy khimii Akademii nauk SSSR) and the Physico-Chemical Institute imeni L.Ya. Karpov (Fiziko-khimicheskiy institut imeni L.Ya. Karpova). Participants of the conference saw the demonstration of new powerful X-ray apparatus and gamma ray equipment.

ASSOCIATION: Institute of Organic Compounds of the AN, USSR (Moskva) (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Moskva)

AVAILABLE: Library of Congress

TSETLIN, B.L.

KUZ'MINSKIY, A.S.; NIKITINA, T.S.; TSETLIN, B.L.

Effect of ionizing radiation on rubbers and vulcanizates. Kauch. i rez. 16 no.6:12-18 Je '57. (MIRA 10:10)

1.Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubber) (Radiation) (Vulcanization)

AUTHOR TSETLIN, B.L., ZAYTSEVA, N.G., 20-2-39/67
KARGIN, V.A., Member of the Academy.

TITLE On Arboriform Cracks in plexiglass, Developed under the action of Electronic Radiation.
(O drevovidnikh treshchinakh, razvivayushikhaya v pleksiglase pod deystviyem elektronnogo izlucheniya - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 380-382, (U.S.S.R.)
Received 6/1957 Reviewed 7/1957

ABSTRACT Such cracks were investigated by the authors in the polymethyl acrylate (or plexiglass on this base respectively), where they develop under the action of an intense radiation energy. As this influence can be important for the adaptability of plexiglass in the domain of radioactive radiation, it attracted their attention. These cracks are a new phenomenon, dissimilar to any other crack--formation in synthetic materials. The arboriform crack originate and grow only from an existing or a caused injury. Its velocity of growth is propotional to the magnitude of the radiation dose. From the original spot they grow and gradually and steadily include the entire surface irradiated. Its branches do not intersect and grow through each other. The different "trees" are clearly marked off from each other. Only fast electrons effect this kind of cracks, X-ray irradiation does not produce this effect. They develop in plates of a suffient thickness, which must be larger than the one

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that is able to disrupt the electron bundle, that is at least 1.7 - 2 mm. The inner cracks and tensions in the material are of no importance for its development. Only the position of the exterior injury and the intensity of the radiation dose determine the kind and velocity of the process. Samples that had been annealed and stretched before at a temperature of 130° and then cooled showed the same network of cracks. These cracks never leave the interior and do not appear on the surface. They are hollow,channel-like and serve as a way for escaping gases that develop on the occasion of irradiation of the plexiglass. Beginning from the original spot these cracks can easily be colored.With increasing temperature their velocity of growth decreases,so that relaxation processes can here be assumed. The formation process of arboriform cracks is common to all organic sorts of glass. The experimental results obtained are not yet sufficient for a final conclusion, therefore it is only provisionally concluded: Obviously these cracks are caused in consequence of developing interior tensions which cause the decomposition of the sample at the weakest points. These are the apertures of the micro-cracks in the spot of the mechanical injury. Their arboriform appearance develops vertically to the direction of the electron bundle. The development of cracks probably proceeds in consequen-

On Arboriform Cracks in Plexiglass, Developed Under the Action of Electronic Radiation.

20-2-39/67

ce of mechanical stresses. The latter can probably be traced back to 2 causes: 1) To the shrinking of plexiglass by its radiation-chemical decomposition, on which occasion a large quantity of gases develops. 2) To the accumulation of an electric surpluscharge. Here the low-molecular decomposition products of the polymer are very important which supersaturated solutions in the entire interior of the sample develop. These products can be absorbed in the apertures of the micro-cracks. Their molecules absorbed near the boundary of the material layer disrupted by fast electrons can have homonymous surplus-charges. The electrostatic interaction of these charges presumably causes the further growth of the cracks by which again new adsorption points develop.
(2 illustrations, among them 1 plate with 5 microphotographs, 2 citations from publications)

ASSOCIATION Institute for Physical Chemistry of the Academy of Science of the U.S.S.R.
PRESENTED BY
SUBMITTED 16.11.1956
AVAILABLE Library of Congress
Card 3/3

AUTHOR TsETLIN, B.L., YaNOVA, L.P., SIBIRSKAYA, G.K., REBINDER, P.A., Member of the Academy. 20-1-40/64

TITLE The properties of plastic masses filled with graphite and the effect produced by high filling.
(Svoystva napolnennykh grafitom plastmass i effekt vysokogo napolneniya.- Russian)

PERIODICAL Doklady akademii nauk SSSR. 1957, Vol 114, Nr 1, pp 146-148 (U.S.S.R.)

ABSTRACT The properties of various materials can, as is known, be considerably improved by the introduction of active fillers. In the present case the effect produced by graphite as an active filler was investigated in connection with a number of systems. The mechanic strength, heat conductivity, and heat storage were investigated. The results obtained are shown by two drawings. Also the course of the lines showing the heat-storing capacity is understandable, which proves that at high temperatures the strengthening effect is more pronounced.
Technological research work carried out on the basis of this paper proved the correctness of the results obtained by the investigations. (with 2 drawings)

CARD 1/2

20-1-40/64

The properties of plastic masses filled with graphite and the effect produced by high filling.

ASSOCIATION: not given.
PRESENTED BY: -
SUBMITTED: -
AVAILABLE: Library of Congress.

CARD 2/2

KORSHAK, V.V.; BEKASOVA, N.I.; CHIKISHEV, Yu.G.; ZAMYATINA, V.A.; TSETLIN, B.L.; RAFIKOV, S.R.

Radiation synthesis of borazole-based polymers. Vysokom. soed. 5 no.10:1447-1450 O '63. (MIRA 17:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

VLASOV, A.V.; GLAZUNOV, P. Ya.; MOROZOV, Yu.L.; PATALAKH, I.I.; POLAK, L.S.; RAFIKOV, S.R., akademik; TSETLIN, B.L.

Synthesis of semiconducting combined materials by the method of gas-phase grafted radiation polymerization. Dokl. AN SSSR 158 no.1:141-142 S-O '64 (MIRA 17:8)

1. AN KazSSR (for Rafikov).

ACCESSION NR: AT4

Tsetlin, B. L.; Zhan,

TITLE: Chemical transformations ... Radiation-induced ... reactions of mixed ... acid and ethylene glycol

... Chemical properties ... and ...

122-125

TOPIC TAGS: mixed polyester, ... sebacic acid, ethylene glycol, polyethylene sebacate, polyethylene terephthalate, vulcanization, ... acid, ionizing radiation, xray vulcanization

ABSTRACT: The radiation-induced ... reactions of polyesters obtained ... investigated. Poly... lene

... than in a vacuum ...

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L 3[illegible]-05

ACCESSION NR: AT4049850

The reduced viscosity of the resulting polyester varied from 0.3 to 0.5. Small [illegible] mm in diamter and [illegible] mm [illegible] rated. The samples were ir-

[illegible]

samples was unchanged after irradiati[illegible] reduced viscosity of [illegible] increased from 0.3[illegible]

[illegible] sample on the character and rate of radiation-induced chemical transformation was also investigated and discussed. [illegible] 2 figures.

[illegible] Institute of Heteroorganic compounds Institute, AN SSSR

Card 2/3

ZAMYATINA, V.A.; KORSHAK, V.V.; SOLOMATINA, A.I.; CHIKISHEV, Yu.G.; TSETLIN, B.L.; RAFIKOV, S.R.; GLAZUNOV, P.Ya.

Radiation synthesis of polymers based on trimeric cyclic dimethylphosphinoborine. Dokl. AN SSSR 159 no.6:1361-1363 D '64 (MIRA 18:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. 2. Chlen korrespondent AN SSSR (for Korshak).

L 34146-65 EPF(c)/EPF(n)-2/EWG(j)/EWA(h)/ EWP(j)/EWT(m)/T/EWA(1)/IC Pc-4/Pr-4/ Pu-4/Peb CG/JAJ/RM/GS

ACCESSION NR: AT4049851 S/0000/64/000/000/0126/0130

AUTHOR: Chao, Hsiang-tsun; Valetskiy, P. M; Vinogradova, S. V.; Glazunov, P. Ya.; Korshak, V. V.; Rafikov, S. R.; Tsetlin, B. L.

TITLE: Chemical transformations of polymers. XI. Radiation-induced chemical reactions of polyarylates

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers); sbornik statey. Moscow, Izd-vo Nauka, 1964, 126-130

TOPIC TAGS: polyarylate, radiation chemistry, isophthalic acid, diphenylol propane, polyethylene terephthalate, polycarbonate, polyisobutylene, hydroquinone, ionizing radiation

ABSTRACT: For the investigation of the radiation-induced chemical reactions of polyarylates, a polyarylate (ID) obtained by polycondensation of isophthalic acid with diphenylolpropane, a polyarylate (IH) based on isophthalic acid and hydroquinone, and a polycarbonate (Makrolon) were used as test samples in both crystalline and amorphous forms. Irradiation was carried out at an electron accelera-

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ACCESSION NR: AT4049851

tor voltage of 800 kv, a current density of 0.1-0.2 microampere (on the samples), and a dose of 2-4 x 10^{18} ev/cc.sec. The preparation of the different samples and the experimental procedure are described. The thermomechanical curves taken at a specific load of 0.8 kg/cm^2 and a heating rate of 75C per hour showed that polyarylates have a high stability toward the effect of ionizing radiation. The radiation yield of the gaseous products of the radiolysis of polyarylates is 0.02 mole/100 ev, which is much lower than the yield from irradiation of polyethylene terephthalate or polycarbonate. The molecular structure of polyarylates does not change significantly at doses on the order of 10^{23} ev/cc. It is to be noted that, in the gaseous products of the radiolysis of polyarylate (ID) and polycarbonate (Makrolon) containing diphenylolpropane residues, even traces of methane are lacking. As is known, during the irradiation of polyisobutylene containing analogous groups (-$C(CH_3)_2$), methane is one of the main components of the gaseous mixture. From the experimental data and from the fact that hydrogen evolution is stronger for ID than for IH, it is concluded that the isopropyl group in diphenylolpropane is stabilized by the two phenyl groups linked with it. The energy of radiation absorbed by this group migrates to the aromatic rings and is partially scattered, as a result of which hydrogen atoms split off from

Card 2/3

L 34146-65

ACCESSION NR: AT4049851

the phenyl groups. Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Heteroorganic compound institute, AN SSSR)

SUBMITTED: 31Aug62 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 005 OTHER: 002

Card 3/3

AUTHOR: Tsetlin, B. L. (Candidate of chemical sciences)

TITLE: Radiochemistry of polymers

SOURCE: AN SSSR. Vestnik, no. 2, 1965, 114-115

TOPIC TAGS: chemical conference, polymer, radiation chemistry, radioactivity, radiation polymerization, polymer physical chemistry

Abstract: A symposium on the radiochemistry of polymers was held in Moscow, 23-28 November 1964. It was [illegible] the Academy of Science SSSR, [illegible] SSSR and the State [illegible]

Card 1/3

L 8631-65
ACCESSION NR: AP5008095

Some of the topics dealt with [illegible] solid state [illegible] makes [illegible] properties, as well as [illegible]

Other papers [illegible] capture [illegible] radicals produced [illegible] presented [illegible] the radiation [illegible]

ACC NR: AT6034054 (N) SOURCE CODE: UR/0000/66/000/000/0088/0092

AUTHOR: Chikishev, Yu. G.; Rafikov, S. R.; Tsetlin, B. L.

ORG: Institute of Organometallic Compounds AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR)

TITLE: Characteristics of radiation polymerization of diphenylvinylphosphine oxide

SOURCE: Simpozium po radiatsionnoy khimii polimerov. Moscow, 1964. Radiatsionnaya khimiya polimerov (Radiation chemistry of polymers); doklady simpoziuma. Moscow, Izd-vo Nauka, 1966, 88-92

TOPIC TAGS: radiation polymerization, organic phosphorus compound, polymerization kinetics, reaction mechanism

ABSTRACT: The principles of radiation polymerization of unsaturated organophosphorus compounds were investigated in this study with molten diphenylvinylphosphine oxide. Products with relatively high molecular weights (higher than in chemical polymerization) were obtained. Kinetics study showed the monomer was completely converted to polymer. There was no induction period and the polymerization rate increased constantly up to 60-70% conversion. There was no gel effect as is usual in radiation polymerization. Polymerization rate was directly proportional to radiation dosage, so radiation yield and molecular weight were independent of dosage. Energy

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ACC NR: AT6034054

of activation was 6.3 kcal/mol. Studies of polymerization in solution and with inhibitors and initiators confirmed the radical mechanism of polymerization. X ray study showed the monocrystalline structure was retained up to about 20% polymerization in the solid phase; by 50-60% conversion the polymer had no characteristic crystalline lattice. Solid phase polymerization has not been noted before. It has the characteristics of a homogeneous process. The polymer forms solid solutions with the monomer in all ratios. Orig. art. has: 5 figures.

SUB CODE: 07/ SUBM DATE: 25Jul66/ ORIG REF: 004/ OTH REF: 006

Card 2/2

ACC NR: AT6034057 SOURCE CODE: UR/0000/66/000/000/0160/0164

AUTHOR: Morozov, Yu. L.; Vitushkin, N. I.; Glazunov, P. Ya.; Rafikov, S. R.; Khomutov, A. I.; Tsetlin, B. L.

ORG: Institute of Organometallic Compounds AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR); Scientific Research Institute for Fiberglass (Nauchno-issledovatel'skiy institut stekloplokna); Institute of Physical Chemistry AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Radiation gas phase graft polymerization on glass fibers

SOURCE: Simpozium po radiatsionnoy khimii polimerov. Moscow, 1964. Radiatsionnaya khimiya polimerov (Radiation chemistry of polymers); doklady simpoziuma. Moscow, Izd-vo Nauka, 1966, 160-164

TOPIC TAGS: radiation polymerization, graft copolymer, polymerization kinetics, glass fiber, acrylonitrile

ABSTRACT: The kinetics of radiation gas phase graft polymerization onto inorganic surfaces were investigated using X ray tube TRTs-3a as the radiation source, acrylonitrile as the monomer, and three types of glass fibers as substrate— 1) conventional nonalkaline nonporous glass fiber, 6-7 micron diameter; 2) fine-pored (6-7 Å effective pore diameter) fiber made by treating the former with hydrochloric

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ACC NR: AT6034057

acid; and, 3) coarse-pored fiber (40 Å effective pore diameter) made by acid treatment of sodium borosilicate fiberglass. Reaction rates were measured directly under the beam with the help of a McBain type device. Induction of the graft polymerization reaction on the nonporous fiber was slow; with the porous materials the induction period was short, with more polymer forming on the coarser material. However when the pores were filled, the graft polymerization reaction rate was about the same as on the nonporous surface. Initial polymerization rates on all three fibers reached limiting values with monomer concentrations—at acrylonitrile vapor pressures were well under 100 mm Hg. In the porous samples the process rate is a linear function of the sorbed monomer concentration; the energy of activation is about 3 kcal/mol. The polymerization rate is proportional to the square root of the dosage for nonporous substrates—glass fiber, aerosil, powdered silica gel. Radical reaction mechanism was confirmed. The polymerization rate is a linear function of the dosage for the fine pored material, probably due to steric hindrance inside the pores rather than to a different reaction mechanism. Reaction initiation on metallic oxide and silicate materials is probably associated with the formation of the oxygen ion radical under ionizing radiation. Orig. art. has: 4 figures.

SUB CODE: 07, 11/ SUBM DATE: 25Jul66/ ORIG REF: 007

Card 2/2

ASD(a)-5/ESD(gp)
ACCESSION NR: AP4045098 S/0020/64/158/001/0141/0142

[redacted]

[redacted]

TOPIC TAGS: organic semiconductor, semiconducting polymer, graft polymerization, polymer glass grafting, polyphenylacetylene, poly-

[redacted] study has shown the feasibility of preparing fibers combining the high mechanical strength of glass and the electrical properties of organic semiconductors by the technique of gas-phase, [redacted] graft [redacted]. In addition, the high ther-

the fibers to produce the desired electrical properties. It is [redacted] semiconducting materials were

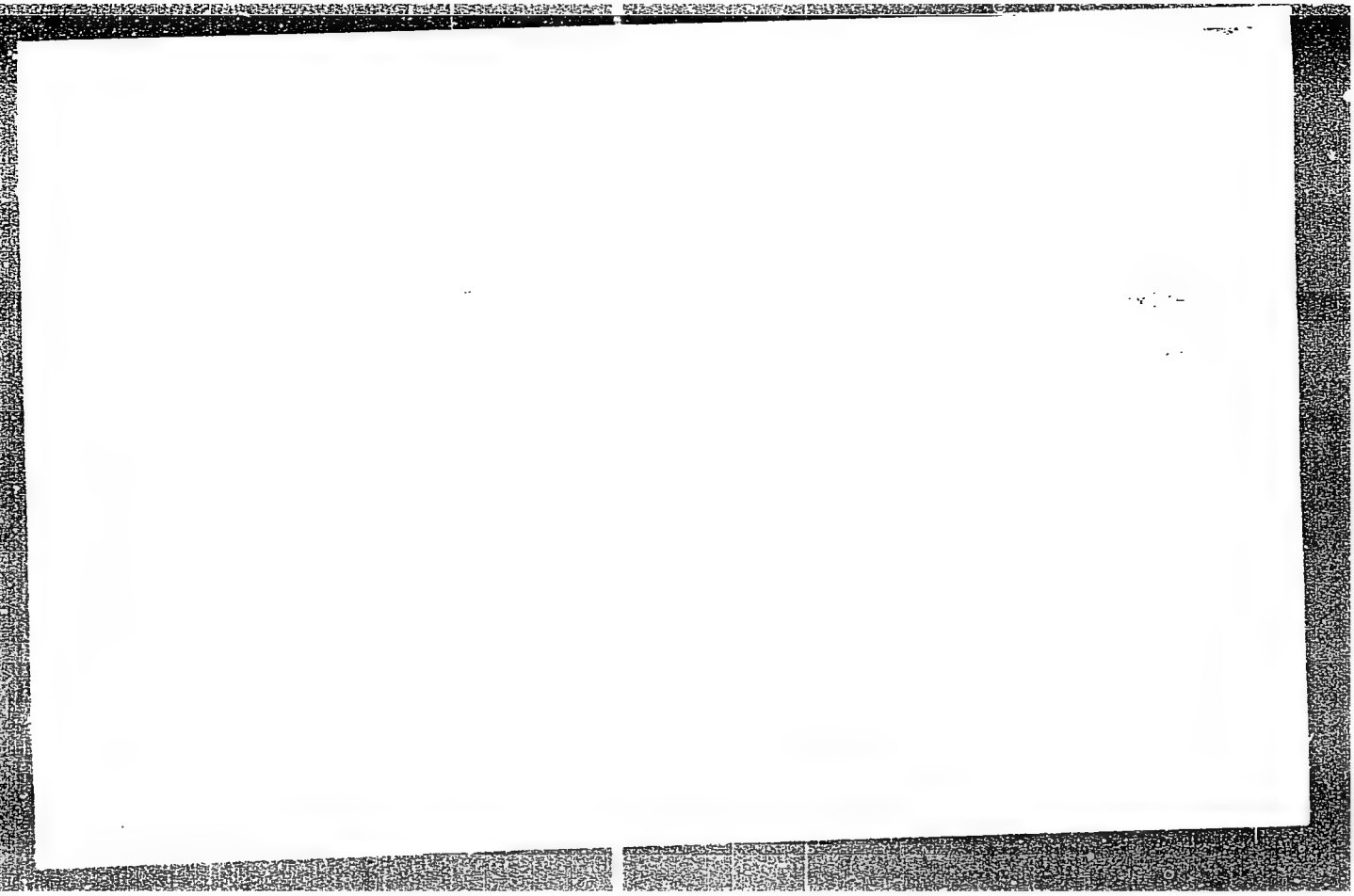
either nonthermoplastic and insoluble powders or brittle fibers and fabrics. Radiation-induced graft polymerization was carried out in

CHIKISHEV, Yu.G.; TSETLIN, B.L.; RAFIKOV, S.R.

Mechanism of the radiation polymerization of diphenylvinylphosphine oxide. Vysokom. soed. 7 no.9:1489-1494 S '65.

(MIRA 18:10)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.



APPROVED FOR RELEASE: 03/14/2001 CIA-RDP86-00513R001757010016-3"

ACCESSION NR: AP5018428

[illegible] compounds, AN SSSR

[illegible] SS

TSETLIN, B.L.

Radiation chemistry of polymers; symposium in Moscow. Vest. AN SSSR 35 no.2:114-115 F '65. (MIRA 18:3)

2

[illegible]/T/EWA(h)/EWA(1) Pc-4/

TITLE: [illegible]
thyl phosphinoborine

SOURCE: AN SSSR. Doklady, v. 154, no. 6, 1964, 1361-1363

TOPIC TAGS: radiation polymer [illegible] dimetnyl phosphin-borine, irradiation effect, linear structure, polycyclic structure

ABSTRACT: It was shown recently (V. I. Kirsanov and N. I. Bekasova, Vysso- [illegible] polymerized under the action

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L 41351-65
ACCESSION NR: AP5001947

[illegible] with a dose of 6.5×10^4

NR REF SOV: 001 OTHER: 002

Card 2/2

ACCESSION NR: AP5010834

AUTHOR: Shablygin, M. V.; Tsvetkova, [illegible]; Tsvetkin, B. Ya.; Tsetlin, B. L.;

TITLE: Formation of [illegible] polymerization from the gas phase onto an ordered polymer film

SOURCE: AN SSSR. Doklady, v. [illegible], no. [illegible], 1965, [illegible]

TOPIC TAGS: [illegible] polymerization polymer film

ABSTRACT: Readily crystallizable vinylidene chloride was polymerized from the gas phase onto a stretched film of high density polyethylene under a ray of [illegible]. [illegible] were obtained [illegible] highly oriented layers [illegible] was [illegible] ground [illegible] vinylidene monomer was [illegible] ture under irradiation was [illegible]

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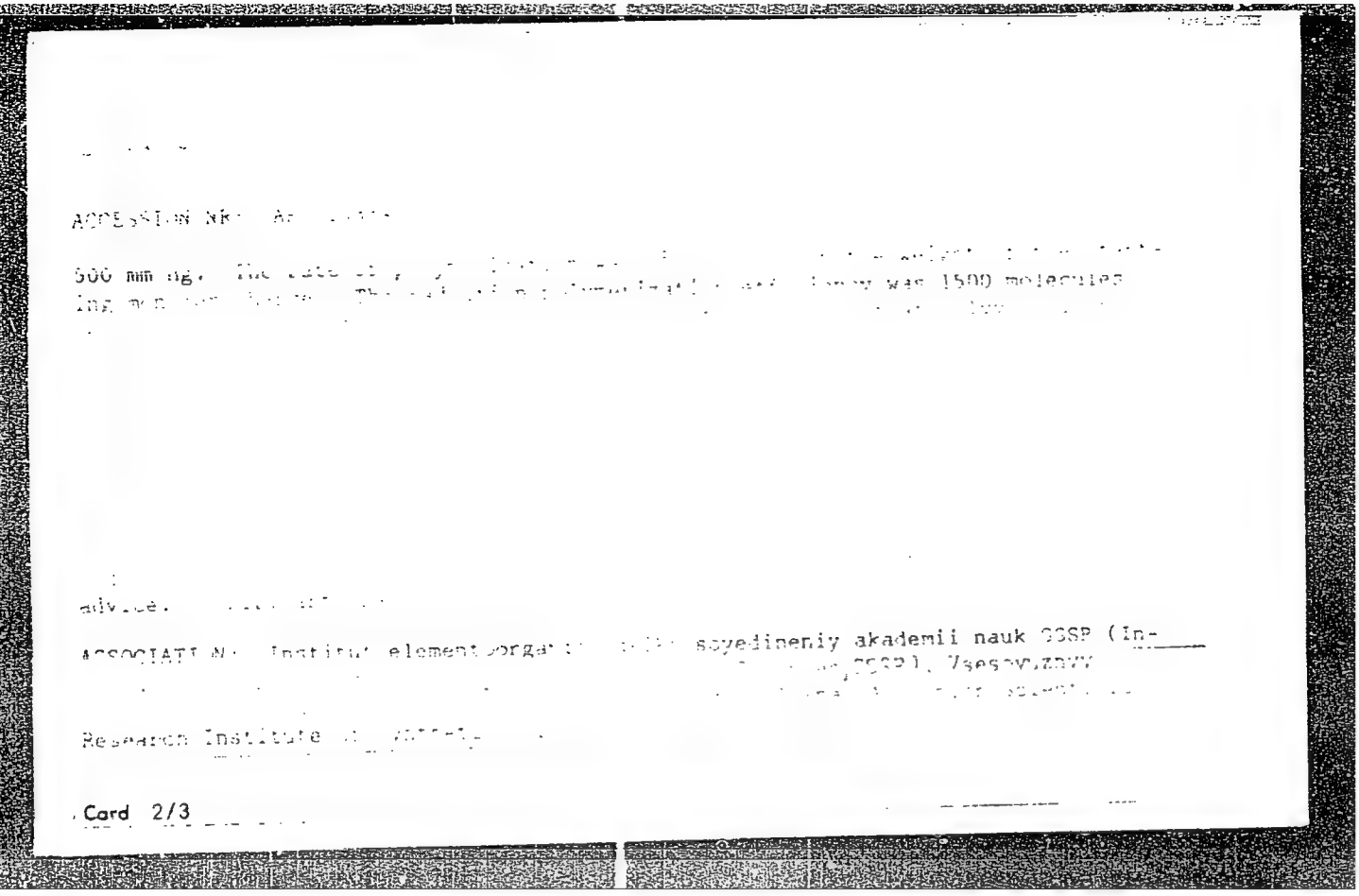


ACCESSION NR: AR [illegible]

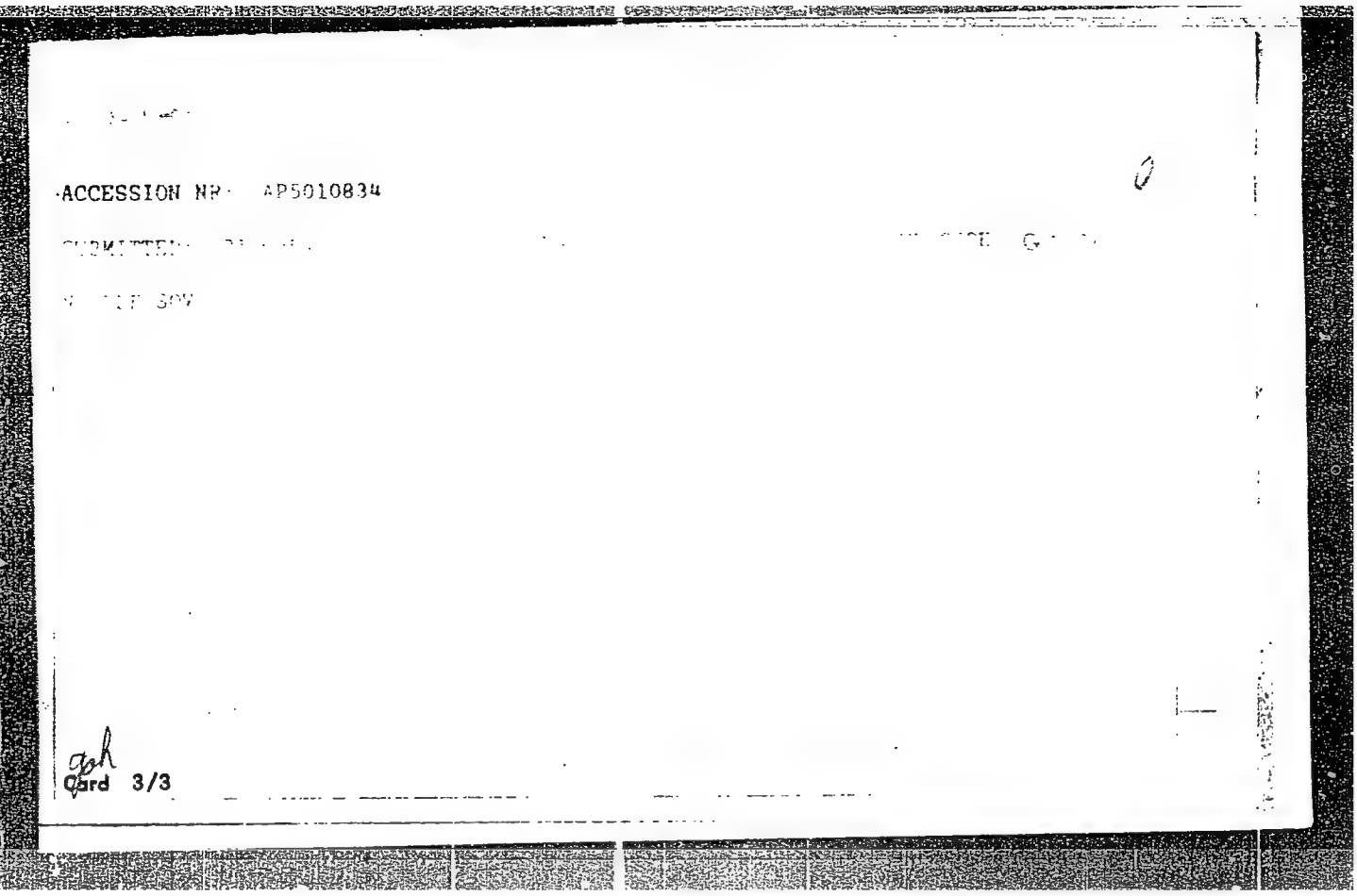
500 mm Hg. [illegible] was 1500) molecules

advice. [illegible]

ASSOCIATE: Institut elementoorganicheskikh soyedineniy akademii nauk SSSR (In- [illegible]

Research Institute [illegible]

Card 2/3



ACCESSION NR: AP5010834

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Card 3/3

CHIKISHEV, Yu.G.; TSETLIN, B.L.; RAFIKOV, S.R.; POLIKARPOV, Yu.M.; MEDVED', T.Ya.; KABACHNIK, M.I.

Laws governing the radiation-induced polymerization of diphenylvinylphosphine oxide in a melt. Vysokom.soed. 7 no.1:33-38 Ja '65. (MIRA 18:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

VLASOV, A.V.; MIKHAYLOV, N.V.; TOKAREVA, L.G.; RAFIKOV, S.R.; TSETLIN, B.L.; GLAZUNOV, P.Ya.

Radiation-induced graft polymerization from the gas phase. Khim.volok no. 6:24-28 '63. (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Vlasov, Mikhaylov, Tokareva). 2. Institut elementoorganicheskikh soyedineniy AN SSSR (for Rafikov, TSetlin). 3. Institut fizicheskoy khimii AN SSSR (for Glazunov).

YEGOROV, Ye.V.; NOVIKOV, P.D.; RAZGON, D.R.; TSETLIN, B.L.

Radiation-induced chemical synthesis of new ion exchange sorbents of organomineral nature. Dokl. AN SSSR 146 no.6:1360-1362 O '62. (MIRA 15:10)

1. Institut khimicheskoy fiziki AN SSSR i Institut elementoorganicheskikh soyedineniy AN SSSR. Predstavlenko akademikom M.I. Kabachnikom.
(Sorbents) (Ion exchange)

VLASOV, A.V.; GLAZUNOV, P.Ya.; MIKHAYLOV, N.V.; RAFIKOV, S.R.; TOKAREVA, L.G.; TSETLIN, B.L.; SHABLYGIN, M.V.

Formation of oriented structures in the radiation polymerization of vinyl monomers on fibers. Dokl.AN SSSR 144 no.2:382-383 My '62. (MIRA 15:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokhna. Predstavleno akademikom V.A.Karginym.
(Vinyl compound polymers) (Radiation)

TSETLIN, B.L.

"Some possibilities of radiation polymerization from the gaseous phase of solid base layers."

Report submitted to the Conference on the Application of Large Radiation Sources in Industry, Salzburg, Austria 27-31 May 1963

S/844/62/000/000/084/129
D423/D307

AUTHORS: Tsetlin, B. L., Rafikov, S. R., Plotnikova, L. I. and Glazunov, P. Ya.

TITLE: Radiation grafting of polymeric chains to the surface of mineral particles

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 497-500

TEXT: The work was carried out with a view to forming and grafting polymer chains to the surface of mineral powders for use in e.g. filters. The experiments were carried out with ZnO, MgO and BeO powders exposed to the vapor of methylmethacrylate at a temperature of 100°C, in thin-walled glass ampoules whilst the entire apparatus was rotated by an electric motor. The radiation source was a 700 kv electron accelerator. There was no evidence for the formation of grafted polymers in the control, nonirradiated experiment, but with a radiation intensity of 1.2×10^{18} ev/cm^3.sec and an exposure time

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of 75 mins, 51.3% by weight on MgO of total polymer was formed, with 20.7% as grafted polymer. Results for BeO with 6×10^{18} ev/cm^2. sec and only 5 min irradiation time yielded 24% of the grafted polymer. The relationship between total quantity of polymer formed and intensity of radiation was shown to correspond to a bimolecular mechanism for rupture of kinetic chains due to recombination of the growing macroradicals, and confirmed the radical mechanism of the polymerization process. Experiments carried out with ZnO did not lead to positive results. This is explained as being due to the property of electron semiconduction, so that the ion-radical of O$^-$ formed is an acceptor of free electrons and its concentration is quite small in ZnO. There are 3 figures and 1 table.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AS SSSR; Institut fizicheskoy khimii AN SSSR (Institute of Elemental Organic Compounds, AS USSR; Institute of Physical Chemistry, AS USSR)

TSETLIN, B.L.; MEDVED', T.Ya.; CHIKISHEV, Yu.G.; POLIKARPOV, Yu.M.; RAFIKOV, S.R.; KABACHNIK, M.I.

Radiation polymerization of tertiary monovinylphosphine oxides. Vysokom.soed. 3 no.7:117-118 Jl '61. (MIRA 14:6)
(Phosphine oxide) (Polymerization)

15.8050

S/190/61/003/007/021/021
B101/B230

AUTHORS: Tsetlin, B. L., Medved', T. Ya., Chikishev, Yu. G., Polikarpov, Yu. M., Rafikov, S. R., Kabachnik, M. I.

TITLE: Radiation polymerization of tertiary monovinylphosphine oxides

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 7, 1961, 1117 - 1118

TEXT: This letter to the editor reports the synthesis of polymers on the basis of tertiary monovinylphosphine oxides (Ref 1: M. I. Kabachnik, T. Ya. Medved', Yu. M. Polikarpov, Dokl. AN SSSR, 135, 849, 1960; M. I. Kabachnik, Chang Jung-yü, Ye. N. Tsvetkov, Dokl. AN SSSR, 135, 603, 1960) to be of great importance due to the high thermal and chemical stability of phosphine oxides. Experiments to polymerize such monomers by applying initiators of the radical polymerization (benzoyl peroxide, azoisobutyric acid dinitrile) failed to produce satisfactory results. Oxides of the tertiary diallyl- and dimethallyl phosphines were, in the presence of

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Radiation polymerization of . . [illegible]77

this type of initiators, either not polymerized at all, or their polymerization proceeded at an extremely low rate with very poor yield (Ref. 2, see below). Authors conducted experiments to initiate polymerization of diethylvinylphosphine oxide (I) and diphenylvinylphosphine oxide (II) by radiation. As source of radiation an X-ray irradiation apparatus was used. Samples were exposed to irradiation in molten state in vacuum. In irradiation of (I) the dose rate was $4.5 \cdot 10^{16}$ ev/ml.sec at an irradiation time of 30 hr at 70°C. As a product, a solid polymer was obtained having a molecular weight of ~33,000 (the monomer was distilled off under vacuum). Degree of conversion amounted to ~80 %, radiation yield G of the polymerization was ~80 molecules of the monomer per 100 ev. The polymer is well soluble in water, ethanol, and benzene. In irradiation of (II), the dose rate was $4 \cdot 10^{15}$ ev/ml.sec for a time of 50 hr at 130°C. A polymer was obtained having a molecular weight of ~30,000; degree of conversion ~60 %, radiation yield ~350 molecules per 100 ev. The polymer is soluble in ethanol and benzene when heated, and may be precipitated from alcohol by adding a small quantity of water. Vitrification temperature of the

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reprecipitated polymer (II) is about 180°C (determined by thermomechanical method, Ref. 3: B. L. Tsetlin, V. I. Gavrilov, N. A. Velikovskaya, V. V. Kochkin, Zavodsk. lab., 22, 352, 1956). It has been proved hereby that the radiation polymerization is an efficient method to obtain polymers on the basis of oxides of monovinylphosphines. Mechanism of the process is being studied at present. [Abstracter's note: Complete translation.] There are 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to English-language publication reads as follows: Ref. 2: K. D. Berlin, G. B. Butler, J. Org. Chem., 25, 2006, 1960; K. D. Berlin, G. B. Butler, J. Amer. Chem. Soc., 82, 2712, 1960

SUBMITTED: February 23, 1961

Card 3/3

6850

5.4500(B)
5.5831

SOV/81-59-20-73660

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 20, p 548 (USSR)

AUTHORS: Tsetlin, B.L., Sibirskaya, G.K.

TITLE: The Effect of Ionizing Radiation on the Thermal-Mechanical Properties of Polyethylene

PERIODICAL: V sb.: Deystviye ioniziruyushchikh izlucheniy na neorgan. i organ. sistemy. Moscow, AS USSR, 1958, pp 344 - 353

ABSTRACT: Samples of polyethylene (I) of M-60 grade with a thickness of 1.2 mm, 50 and 30 mm in diameter, were subjected to irradiation in the air by electrons (dose intensity 1.7×10^{17}-1.1×10^{19} ev/cm^{3}sec, integral doses 3.0×10^{20}-1.6×10^{23} ev/cm^{3}sec) and by X-rays (dose intensity 1.2×10^{16} ev/cm^{3}sec; integral doses $\sim 10^{21}$ ev/cm^3). The curves of the dependence of the value of uniaxial compression and extension of the irradiated samples on the temperature have been obtained. At temperatures below T (melt) of non-irradiated I the shape of the curves did not change after irradiation. Above this temperature the irradiated sample passes into the highly-elastic state with a final module value proportional to the dose. The efficiency of the action of radiation on

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68550

SOV/81-59-20-73660

The Effect of Ionizing Radiation on the Thermal-Mechanical Properties of Polyethylene

the thermal-mechanical properties of I is determined by the value of the integral dose. The irradiation of I in vacuum has shown that oxygen at the given dose intensities does not affect the rate of radiation cross-linking of I, because it has no time for diffusing into the sample volume. With an increase in the dose the temperature increases, at which the sample of I breaks under the action of a certain load.

A. Litmanovich

Card 2/2

5.3831
5.4500(B)

68957
SOV/81-60-2-7085

Translation from: Referativnyy zhurnal. Khimiya, 1960, Nr 2, pp 546 - 547 (USSR)

AUTHORS: Tsetlin, B.L., Yanova, L.P., Sibirskaya, G.K., Korbut, V.M.

TITLE: The Effect of Ionizing Radiation on the Mechanical Properties of Polyvinylchloride and Its Masticated Products

PERIODICAL: V sb.: Deystviye ioniziruyushchik izlucheniy na neorgan. i organ. sistemy. Moscow, AS SSSR, 1958, pp 354 - 361

ABSTRACT: The effect was studied of highly-intensive X-ray radiation on the changes in the mechanical properties of industrial vinyplast (V) sheet and masticated (M) products on the base of polyvinylchloride containing dibutylphthalate in the quantity of 10 - 60 weight %. A dismountable X-ray tube with a cylindrical anode of the TRTs type serves as radiation source. In the case of the irradiation of V the doese intensity was $6 \cdot 10^{16}$ ev/cm^3 sec and the duration of the irradiation from 1 to 50 hours, and in the case of irradiation of M $1.8 \cdot 10^{17}$ ev/cm^3 sec and 5 hours, respectively. Samples for thermomechanical tests were prepared in the form of disks of 7 mm in diameter and with a thickness of 1 mm, the specific load for V was 10.2 kg/cm^2 and for M 0.8 kg/cm^2. The following

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68957
SOV/81-60-2-7085

The Effect of Ionizing Radiation on the Mechanical Properties of Polyvinylchloride and Its Masticated Products

data were cited and discussed: the thermomechanical compression curves for V depending on the radiation dose and for M depending on the percentage of dibutylphthalate; the expansion curves of V samples at 20, 75 and 100°C (at an expansion rate of 7% per 1 min) depending on the radiation dose; a table with the data of the radiation effect on the temporary bending resistance of V (on microsamples of 10 x 8 x 0.5 mm). It has been established that under the effect of hard radiation V undergoes the process of radiation vulcanization, i.e., from the two processes taking place simultaneously - structuralization and destruction - the first prevails; the change of the mechanical properties of V under the action of radiation is determined by the formation of a three-dimensional lattice as well as by the appearance of a large number of inner microdefects due to the gas formation taking place in the bulk of the material (splitting off of HCl); M also undergo the radiation vulcanization, in which case the rate of the process decreases in proportion to an increase in the content of plasticizer.

N. Gardenin

Card 2/2

5.4500(B)
5.3831

65854

SOV/81-59-21-77229

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 21, pp 563 - 564 (USSR)

AUTHORS: Tsetlin, B.L., Zaytseva, N.G., Korbut, V.M., Kargin, V.A.

TITLE: The Action of Ionizing Radiation on Polymer Glass

PERIODICAL: V sb.: Deystviye ioniziruyushchikh izlucheniy na neorgan. i organ. sistemy, Moscow, AS USSR, 1958, pp 362 - 375

ABSTRACT: The effect of irradiation of polymers by fast electrons and X-rays on their thermomechanical properties and resistance has been investigated by experiment, and the process of formation of dendritic cracks and gas bubbles during irradiation has also been studied. The following samples were investigated: Polystyrene, non-plasticized polymethylmethacrylate, polymethylmethacrylate containing 6% dibutylphthalate, the copolymer of methylmethacrylate with isobornyl methacrylate, the copolymer of methylmethacrylate and methacrylic acid, poly-α-chloroacrylate, poly-n-dichlorostyrene and polytrifluorochloroethylene. It has been established that in polystyrene the process of structuralization takes place, whereas in all other polymers destruction is observed which is accompanied by the reduction of the flow temperature and the

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The Action of Ionizing Radiation on Polymer Glass SOV/81-59-21-77229

resistance with an increase in the dose. The stabilizing effect of aromatic groups, and the increase in the probability of bond ruptures in the principal chains of the macromolecules at the presence of quarternary carbon atoms in them have been detected, as well as a decrease in the destruction rate with increasing sizes of the side groups in the polymethacrylate series. The character of the growth of the dendritic cracks has been studied in conformity with the adsorption mechanism proposed earlier by the authors (RZhKhim, 1957, Nr 22, 71846). It has been shown that the gas formation during radiolysis is closely connected with the formation of oversaturated solutions of gases in the polymer. It has been noted on polymethylmethacrylate plasticized with 6% dibutylphthalate that low-molecular admixtures accelerate the process of destruction. It has been shown that the process of radiolysis of polymer glass is irreversible.

I.V.

Card 2/2

SOV/58-59-8-17758

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 112 (USSR)

AUTHORS: Tsetlin, B.L., Yanova, L.P., Sibirskaya, G.K., Korbut, V.M.

TITLE: The Effect of Ionizing Radiation on the Mechanical Properties of Polyvinyl Chloride and its Plasticates

PERIODICAL: V sb.: Deystviye ioniziruyushchikh izlucheniy na neorgan. i organ. sistemy. Moscow, AN SSSR, 1958, pp 354-361

ABSTRACT: Under the influence of hard radiation polyvinyl chloride undergoes a process of radiation vulcanization, i.e. of two simultaneously proceeding processes --- construction and destruction --- the former predominates. The variation of the mechanical properties of polyvinyl chloride under the influence of radiation is determined by the formation of a three-dimensional lattice, as well as by the appearance of a great number of internal microdefects, which are due to the gas-formation (splitting off of HCl) which takes place within the confines of the material. (In-t fiz. khimii AN SSSR).

The author's résumé

Card 1/1

TSETLIN, B.L.

3

38110
S/020/62/144/002/023/028
B101/B110

15.5540

AUTHORS: Vlasov, A. V., Glazunov, P. Ya., Mikhaylov, N. V., Rafikov, S. R., Tokareva, L. G., Tsetlin, B. L., and Shablygin, M. V.

TITLE: Formation of oriented structures in radiation-induced polymerization of vinyl monomers on fibers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 2, 1962, 382 - 383

TEXT: An attempt was made to obtain oriented polymers by polymerizing the monomer from the gas phase on oriented macromolecules of fibers acting as "matrices". The experiments were made with a two-chamber apparatus as used for graft polymerization of vinyl monomers on mineral particles (cf. B. L. Tsetlin et al., Tr. 2-go Vsesoyuzn. soveshch. po radiatsionnoy khimii, Izd. AN SSSR, 1962). One chamber contained caprone cord fiber heated to 80°C, and the other contained completely anhydrous acrylonitrile (40°C). Irradiation was made with X-rays (dose rate, $3 \cdot 10^{15}$ ev/cm^3·sec) for 3 - 6 hrs at 10^{-4} - 10^{-5} mm Hg. The weight of the fiber increased by 15 - 33 %. The perpendicular dichroism in the -C≡N stretching vibrations (2235 cm^{-1}),

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S/020/62/144/002/023/028
B101/B110

Formation of oriented structures in ...

detected by spectroscopy, proved the orientation of the polymer. Experiments with acrylonitrile and non-oriented fiber as well as with liquid acrylonitrile and oriented fiber showed no dichroism. The liquid monomer molecules are assumed to prevent orientation. Further experiments with polymers, man-made and natural fibers used as "matrices" are under way. There is 1 figure.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR). Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (All-Union Scientific Research Institute of Synthetic Fibers)

PRESENTED: January 19, 1962, by V. A. Kargin, Academician

SUBMITTED: January 12, 1962

66388
SOV/58-59-10-22536

5,3831

Translation from: Referativnyy Zhurnal, Fizika, 1959, Nr 10, pp 108 - 109 (USSR)

AUTHORS: Tsetlin, B.L., Sibirskaya, G.K.

TITLE: Effect of Ionizing Radiation on the Thermomechanical Properties of Polyethylene

PERIODICAL: In the Symposium: The Effect of Ionizing Radiation on Inorganic and Organic Systems. AS USSR, 1958, pp 344 - 353

ABSTRACT: Samples of polyethylene were irradiated in the open air with fast electrons and X-radiation. The samples were disk-shaped plates 1.2 mm thick and 50 mm in diameter. The electron radiation dose rate varied from $1.7 \cdot 10^{17}$ to $1.1 \cdot 10^{19}$ ev/cm^3 · sec, while the X-radiation dose rate amounted to $1.2 \cdot 10^{16}$ ev/cm^3 · sec; the overall radiation dose varied from $3 \cdot 10^{20}$ to $1.6 \cdot 10^{23}$ ev/cm^3. The radiation vulcanization of polyethylene was established: at the melting point the starting polymer effects a transition to a visco-elastic state with a finite modulus value that is proportional to the dose. In the investigated range of dose rate values the law of the equivalent effect of equal

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66388
SOV/58-59-10-22536

Effect of Ionizing Radiation on the Thermomechanical Properties of Polyethylene

doses can be observed: the dose rate and duration of irradiation do not affect the efficiency of the process. The heat resistance of irradiated polyethylene increases with an increase in dosage. The authors explain the process of radiation vulcanization in terms of recombinations of free radicals of the $R_1 \cdot CH \cdot R_2$ type, which arise upon an initial breaking of C—H bonds. (In-t fiz. khimii AS USSR).

A.V. Sidorovich

Card 2/2

5(4)

AUTHORS: Tsetlin, B. L., Sergeyev, V. A., Rafikov, S. R., Korshak, V. V., Corresponding Member AS USSR, Glazunova, P. Ya., Bubis, L. D.

SOV/20-126-1-33/62

TITLE: The After-effect in the Irradiation of Methylmethacrylate in the Presence of Oxygen (Effekt posledeystviya pri obluchenii metilmetakrilata v prisutstvii kisloroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 123-125 (USSR)

ABSTRACT: It is a known fact that oxygen inhibits the radical polymerization of many vinyl monomers. This is the case also with radiation polymerization (Ref 1). However, the irradiated monomer is able to polymerize later, as soon as the supply of oxygen is interrupted (Ref 2). This manner of utilizing ionization energy is of practical interest. The authors investigated the basic rules of this process. The monomer was irradiated with fast electrons (900 kev) in an accelerator of the second Institute mentioned under Association. Figure 1 shows the kinetic polymerization curve in dependence on the radiation dose R. The initial velocity V_o of polymerization is, as figure 2 shows, proportional to $R^{1/2}$.

Figure 3 shows the influence exercised by temperature upon V_0. Polymerization was introduced by evacuation. The activation energy was calculated as amounting to 11.2 kcal/mol. It is thus considerably lower than the activation energy in the polymerization of methyl methacrylate with benzoyl peroxide, which amounts to 19.7 kcal/mol. The high activity of the peroxide groups formed by irradiation facilitates polymerization at low temperatures. Figure 4 shows the development of polymerization by irradiation, and, as a comparison, the effect of 0.01 % benzoyl peroxide. Apart from the low reaction temperature, irradiation offers the further advantage that, after irradiation, polymerization may be begun at any desired point of time. There are 4 figures and 9 references, 5 of which are Soviet.

The After-effect in the Irradiation of Methyl-methacrylate in the Presence of Oxygen SOV/20-126-1-33/62

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR). Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: February 25, 1959

Card 3/3

5(3)

AUTHORS: Kolesnikov, G. S., Fedorova, L. S., Tsetlin, B. L., Klimentova, N. V. SOV/62-59-4-27/42

TITLE: Carbon Chain Polymers and Copolymers (Karbotsepnyye polimery i sopolimery). Communication 9. Synthesis and Properties of Copolymers of Vinylidene Chloride With Acrylonitrile and Methylmethacrylate (Soobshcheniye 9. Sintez i svoystva sopolimerov khloristogo vinilidena s akrilonitrilom i metilmetakrilatom)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 731-735 (USSR)

ABSTRACT: In the present work an attempt was made of finding out the effect of the composition of copolymers of vinylidene chloride with acrylonitrile and methylmethacrylate on their transition temperatures in various physical states and on their solubility in organic solvents. In the synthesis of the copolymers and in the investigation of their properties the same methods were used as in the investigation of the copolymers of acrylonitrile with methylmethacrylate (Ref 16). The results obtained in the investigation of the composition and properties of the copolymers of the system vinylidenechloride-acrylonitrile

are shown in table 1. The conditions were similar in all cases. The only change was in the ratio of the monomers in the initial solution. The values of the vitrification temperature (T_{st}) and the flowing temperature (T_t) of the copolymers were determined from the thermomechanical compression curves (Fig 1). Table 1 shows that a higher vinylidene chloride-monomer content in the initial solution reduces the yield of the copolymer. Of all copolymers obtained only that with 44.1 mol% vinylidene chloride content is soluble in acetone. This copolymer has the least viscosity and the lowest T_{st}. Upon transition from the homopolymer of vinylidene chloride to copolymers with already smaller quantities of acrylonitrile the thermomechanic curves assume the form which is characteristic of normal thermomechanic curves of linear amorphous polymers. The values T_{st} and T_t decrease rapidly. Table 2 shows the investigation results of the system vinylidene chloride-methylmethacrylate. Figure 2 shows the thermomechanic curves for the samples of

Carbon Chain Polymers and Copolymers. SOV/62-59-4-27/42
Communication 9. Synthesis and Properties of Copolymers of Vinylidene Chloride With Acrylonitrile and Methylmethacrylate

this system. All copolymers are easily soluble in dichloroethane. Copolymers with a content of 20 mol% vinylidene chloride are soluble in acetone. With a higher vinylidene chloride content they become insoluble in acetone. Copolymers with a high vinylidene chloride content have a low T_{st} and T_t just as in the system vinylidene chloride-acrylonitrile. Numerous copolymers of this system have a comparatively low T_t and sufficiently high T_{st}. For this reason it might be possible to manufacture these copolymers by means of casting methods. There are 2 figures, 2 tables, and 30 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: July 18, 1957
Card 3/3

PAVLOVA, S.A.; RAFIKOV, S.R.; TSETLIN, B.L.

Regularities in the radiation vulcanization of polyamides; examplified by "anid G-669." Dokl. AN SSSR 123 no.1:127-130 N '58.
(MIRA 11:12)

1. Predstavleno akademikom V.A. Karginym.
(Polyamides) (Vulcanization) (X rays--Industrial applications)

5(4)

AUTHORS: Pavlova, S. A., Rafikov, S. R., Tsetlin, B. L.

SOV/20-123-1-34/56

TITLE: On the Regularities of the Radiation Vulcanization of Polyamides (O zakonomermostyakh radiatsionnoy vulkanizatsii poliamidov) By Means of the Samples of Anid G-669 (Na primera anida G-669)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1, pp 127-130 (USSR)

ABSTRACT: The present paper deals with the procuring of experimental proof of the reactions of the destruction and structural formation by the action of an ionizing radiation upon polyamides. The soluble mixed polyamide "Anid G -669", which is produced by polycondensation of hexamethylene diamine with adipic acid and mitazelaic acid as well as with caprolactate, was used as experimental object. The samples of 1 mm thickness of "Anid G -669" were irradiated for 1 - 20 hours in air and also in a vacuum. An X-ray tube of the type TRB -3 was used as radiation source. A diagram shows the thermomechanical curves of the compression of the samples of "Anid G -669" as a function of the dose. Already after three hours of irradiation a fraction, which is insoluble in acetic acid (7 percents of weight), occurs,

the portion of which increases to 76% after being irradiated for 10 hours. The second diagram shows the dependence of the viscosity of the solutions on their concentration for "Anid G -669" in creosol and in acetic acid. As a result of irradiation, the viscosity for creosol solutions decreases and it increases for solutions in acetic acid. Two further diagrams show the results obtained by the turbidimetric titration of non-irradiated and irradiated "Anid G -669" in form of integral and differential distribution curves (with respect to solubility). The maximum of the original differential distribution curve divides into a double maximum as a result of irradiation. The distance between the two maxima increases with an increase of the dose. If the dose is larger than that corresponding to the forming of a yellow color, the differential distribution curves correspond to the distribution over solubility within the brine fraction. The experimental data obtained by the present paper show the following: Under the influence of irradiation processes of production of transversal bonds and of the destruction of the main chains of the macromolecules take place in the polyamide.

On the Regularities of the Radiation Vulcanization of Polyamides . By Means of the Samples of Anid G-669 SOV/20-123-1-34/56

A complex investigation of the change of the mechanical properties and of the properties of the solutions, as well as of the distribution function with respect to molecular weights makes it possible to give a sufficiently complete estimate of the change of the molecular structure of polyamides during their radiation-chemical transformation. Apparently, the application of similar investigation methods makes it possible to separate the parallel reactions of structural formation and of the destruction of polymers of different structures. There are 4 figures and 8 references, 5 of which are Soviet.

PRESENTED: June 25, 1958, by V. A. Kargin, Academician

SUBMITTED: June 23, 1958

Card 3/3

TSETLIN, B. L., ZAYTSEVA, N. G., KORBUT, V. M. and KARGIN, V. A.

"Principles of the Disintegration of Vitreous Polymers by Radiation"

Truly Transactions of the First Conference on Radioaction Chemistry, Moscow,
Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

BAKH, N.A., prof., otvetstvennyy red.; MEDVEDEV, S.S.; VESELOVSKIY, V.I., prof.; DOLIN, P.I., doktor khim. nauk; MILLER, N.B., kand. khim. nauk; TSETLIN, B.L., kand. khim. nauk; TRIFONOV, D.N. red. izd-va; BUGAYENKO, L.T., red. izd-va; MOSKVICHEVA, N.I. tekhn. red.

[Transactions of the First All-Union Conference on Radiation Chemistry]. Vsesoiuznoe soveshchanie po radiatsionnoi khimii. 1st, Moscow, 1957. Trudy... Moskva, Izd-vo Akad. nauk SSSR, 1958. 330 p. (MIRA 11:7)

1. Chlen korrespondent Akademii nauk SSSR (for Medvedev).
(Radiochemistry--Congresses)

AUTHORS: Kolesnikov, G. S., Fedorova, L. S., Tsetlin, B. L., Klimentova, N. V. SOV/62-58-7-15/26

TITLE: Carbon Chain Polymers and Copolymers (Karbotsepnyye polimery i sopolimery) Communication 5. The Synthesis and the Properties of the Copolymers of Acrylonitryl and Methyl Methacrylate (Soobshcheniye 5. Sintez i svoystva sopolimerov akrilonitrila i metilmetakrilata)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 7, pp 886 - 890 (USSR)

ABSTRACT: The present paper deals with the explanation of the influence of the correlation of the monomers (in the initial mixture) on the composition (structure) of the copolymer at a relatively high rate of reaction. The authors further deal with the investigation of the dependence of some properties of the copolymers on their structure. The authors produced acrylonitryle and methyl methacrylate copolymers by means of an emulsion at a high rate of reaction. Furthermore the structure of these copolymers was determined. It was found that minimum values of the characteristic viscosity of the copolymers on the one hand, and of the temperatures of the passage into highly elastic and more liquid

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Carbon Chain Polymers and Copolymers. Communication 5: SOV/62-58-7-15/26
The Synthesis and the Properties of the Copolymers of Acrylonitryl and Methyl Methacrylate

state on the other hand correspond to copolymers of different structure. It was also found that methyl methacrylate copolymers with acrylonitryle (up to 30 molar % of acrylonitryle) approach poly methyl methacrylate very closely as regards its stability. There are 3 figures, 2 tables, and 11 references, 2 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental-organic Compounds, AS USSR)

SUBMITTED: December 30, 1956

Card 2/2

TSETLIN, B.L.

in collection of articles--
Effect of Ionizing Radiation (~~Contin~~) on Inorganic ~~and~~ and Organic Systems, Moscow, Izd-vo AN SSSR, 1958, 416pp (most works a continuation of Sb rabot po radiat khim, 1955)

The effect of carbon blacks is modified by their degree of oxidation. There are 8 figures, 1 table, and 17 references of which 7 are Soviet, 8 English, 1 French, and 1 German.

Tsetlin, B.L., Sibirskaya, G.K. Effect of Ionizing Radiation on the Thermomechanical Properties of Polyethylene 344

Polyethylene undergoes vulcanization when irradiated with electrons and X-rays. At a temperature corresponding to the melting point of the initial polymer, the irradiated substance converts to a highly elastic state the modulus of which is proportional to the dosage. In the range of 10^{16} - 10^{19} ev/cm sec vulcanization effectiveness follows the principle of equivalent effect of equal doses. The thermal stability of polyethylene increases with increased dosage. The mechanism of radiation vulcanization is related to the recombination of the $R_1 \cdot \dot{C}H \cdot R_2$ radicals which result from primary rupture of the C - H bonds. There are 4 figures, 1 table, and 22 references of which 14 are Soviet, 7 English, and 1 French.

Card ~~27/31~~ 1/3

Effect of Ionizing Radiation (Cont.)

Tsetlin, B.L., Yanova, L.P., Sibirskaya, G.K., Korbut, V.M. 354
Effect of Ionizing Radiation on the Mechanical Properties of Polyvinyl Chloride and Its Plastics

Polyvinyl chloride undergoes vulcanization due to the effect of hard radiation. The changes in mechanical properties result from the formation of a three-dimensional lattice and the occurrence of multiple inner micro-defects (due to gas formation). Polyvinyl chloride base plastics also undergo radiation vulcanization. The rate of the process decreases with the increase of the plasticizer content. There are 5 figures, 1 table, and 16 references of which 10 are Soviet, 3 German, and 3 English.

Tsetlin, B.L., Zaytseva, N.G., Korbut, V.M., Kargin, V.A. 362
Effect of Ionizing Radiation on Vitreous Polymers

This paper reports an experimental study of radiational destruction of vitreous polymers: changes in the thermo-chemical properties, gas formation, dendritic fissures. The modifying factors are: the stabilizing effect of aromatic groups, greater probability of bond rupture in the main chains of macromolecules due to the presence of tertiary

carbon atoms in them, decrease in the rate of radiation destruction of polymethylmethacrylate and its analogs with increase in the size of side groups, intensification of the destruction process in the presence of low molecular weight plasticizers. The fissure formation is interpreted as having an adsorption-type mechanism. The process of radiochemical conversion of plexiglass is regarded as irreversible.

BAKH, N.A., prof., otv. red.; MEDVEDEV, S.S., red.; VESELOVSKIY, V.I., prof., red. DOLIN, P.I., doktor khim. nauk, red.; MILLER, N.B., kand. khim. nauk, red. TSETLIN, B.L., kand. khim. nauk, red.; TRIFONOV, D.N., red. izd-va.; BUGAYENKO, L.T., red. izd-va.; MOSKVICHEVA, N.I., tekhn. red.

[All-Union Conference on Radiation Chemistry: transactions] Trudy I Vsesoiuznogo soveshchaniia po radiatsionnoi khimii.[Moscow, 1957.] Moskva, Izd-vo Akad. nauk SSSR, 1958. 330 p. (MIRA 11:11)

1. Chlen-korrespondent AN SSSR (for Medvedev).
(Radiochemistry)

L 1151-66 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) GG/RM
ACCESSION NR: AP5022588 UR/0190/65/007/009/1489/1494
66.095.26+678.86

AUTHORS: Chikishev, Yu. G.; Tsetlin, B. L.; Rafikov, S. R.

TITLE: On the mechanism of the radiation polymerization of diphenylvinylphosphine oxide. 3rd communication in the series "Radiation polymerization of tertiary phosphine oxides"

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1489-1494

TOPIC TAGS: radiation polymerization, polymer, resin, radical polymerization, dimethyl formamide, methylene chloride, tertiary phosphine oxide

ABSTRACT: The radiation polymerization of diphenylvinylphosphine oxide in various solvents was studied in order to elucidate the reaction mechanism and the effect of solvents on radiation polymerization. The investigation is a continuation of the work reported previously, Yu. G. Chikishev, B. L. Tsetlin, S. R. Rafikov, Yu. M. Polikarpov, T. Ya. Medved', M. I. Kabachnik (Vysokomolek. soyed., 7, 33, 1965) and the experimental procedure followed here was the same as that reported in the same reference. The rate of polymerization was studied as a function of radiation dosage and temperature in dimethylformamide and methylene chloride solutions. The

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ACCESSION NR: AP5022588

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effect of adding benzoquinone, diphenylpiperylhydrazine, ZnO, MgO, and SiO_2 on the polymerization rate was also studied. The experimental results were compared with data on polymerization rates for reactions initiated with tertiary butyl peroxide. The experimental results obtained in dimethylformamide and methylene chloride solutions are shown in Figures 1 and 2 respectively on the Enclosure. It is concluded that the radiation polymerization in the melt as well as in solution is of a radical nature. The authors thank M. I. Kabachnik and A. D. Abkin for their valuable discussions and advice. Orig. art. has: 1 table and 4 graphs.) 44,55

44,55

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute for Hetero-Organic Compounds, AN SSSR)

44,55

SUBMITTED: 28Jul64 ENCL: 02 SUB CODE: OC, GC

NO REF SOV: 006 OTHER: 005

Card 2/3

L 1151-66
ACCESSION NR: AP5022588

ENCLOSURE: 01

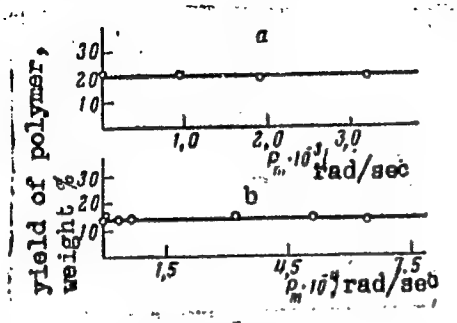

Fig. 1.
Dependence of polymer yield on radiation dosage in solution: a- dimethylformamide, b- methylene chloride. a- radiation dosage 4.6×10^6 rad, temperature T = 25C; b- radiation dosage 7.7×10^6 rad, T = 20C

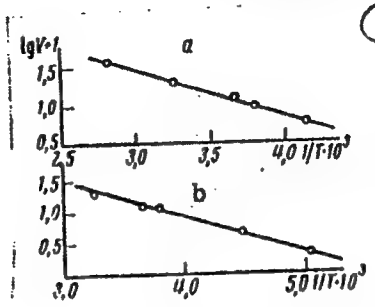

Fig. 2.
Dependence of the radiation polymerization rate of diphenylvinylphosphine oxide in solution on the irradiation temperature: a- dimethyl formamide; b- methylene chloride. a- radiation dosage 3.8×10^6 rad; b- radiation dosage 9.6×10^6 rad

Card 3/3

TSETLIN, B.M., GATENYAN, A.V.; TURUTKIN, B.A., tekhnik.

Supplying dial central offices with current from selenium rectifiers. (MIRA 11:10)
Energetik 6 no.8:31-32 Ag '58.
(Telephone--Current supply) (Electric current rectifiers)

SOV/112-59-2-2757

8(6)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 2, p 68 (USSR)

AUTHOR: Tsetlin, B. M.

TITLE: Electrical Part of the Knyazh'ya Guba Hydroelectric Generating Station (Elektricheskaya chast' Knyazhegubskoy GES)

PERIODICAL: V sb.: Novoye v proyektir. elektr. chasti gidroelektrost. M.-L., Gosenergoizdat, 1957, pp 109-111

ABSTRACT: An electrical part evaluation from the operating standpoint is offered. The main station scheme includes four 40-Mva generators, each operating as a unit with a 40.5-Mva transformer. Two 110-kv transmission lines serve as interconnections with the bulk-power system. The 10-kv switchgear receives power from the generators over two lines with reactors. The scheme satisfies operating requirements. The station power auxiliaries are supplied from two 10/0.4-kv 750-kva transformers. Disadvantages of the station-auxiliaries supply at 0.4 kv are indicated. The DC installation has a standard scheme with

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Electrical Part of the Knyazh'ya Guba Hydroelectric Generating Station

two storage batteries. Defects are cited in the relay protection, automatic and telemechanical devices and in the control circuits. The lighting distributing board is supplied by the station-auxiliaries transformers that have, as a rule, a higher-than-normal voltage which shortens lamp life; other disadvantages of the lighting system are cited. The layout with the control board placed in an end annex and with the 10-kv switchgear in the middle part of the building is noted as satisfactory. The location of main transformers on the line perpendicular to the building axis is a disadvantage because it necessitated long and cumbersome busways. Manufacturers' imperfections in electrical equipment are listed: low quality of MGG-110 circuit breakers, defects in the ZTZ switchgear assemblies, winding breaks in the MTZ transformers, etc.

S.S.L.

91-58-8-25/34

AUTHORS: Tsetlin, B.M., Shop Superintendent; Gatenyan, A.V., Shop Superintendent; Turutkin, B.A., Technician

TITLE: A Power Supply for Automatic Telephone Offices Using Selenium Rectifiers (Pitaniye avtomaticheskikh telefonnykh stantsiy ot selenovykh vypryamiteley)

PERIODICAL: Energetik, 1958, Nr 8, pp 31-32 (USSR)

ABSTRACT: The author describes a device to supply power to an UATS-100 automatic telephone station at 58-64 v and 1-5 amp with permissible pulsation of 0.1%. The device rectifies line current by using three bridges of selenium rectifiers (a total of 18 rectifiers). Smoothing is carried out by a 0.132 henry air-core choke and a 600 mf electrolytic condenser. An emergency reserve power system consisting of a 220 v ac motor-generator, VSA-5 rectifier unit and the

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